

Section.

Beneficial Regulatory and Technical Attributes of the TerreStar 1400 MHz Band



TerreStar 1400 MHz Spectrum

Securing the Value and Negotiability of the TerreStar 1400 Asset



Transforming TSTR 1400 Into a High Value Asset

applications will benefit from extremely high spectral efficiencies, which meaningfully exceed those in other parts of the commercial wireless spectrum wireless applications. The band's low noise floor and advantageous urban propagation characteristics suggest that proposed 4G TerreStar's 1400 MHz spectrum displays physical characteristics that are uniquely well suited to bit-intensive and latency intolerant

POP values currently associated with this spectrum and the baseline \$0.22 -> \$1.00 per MHz-POP valuations associated with market values, such as those presently associated with 700 MHz or AWS-1. Bridging the gap between the low \$0.01 - \$0.05 per MHzregulatory and technological obstacles stand between the minimal baseline valuations set in FCC Auction 69 and much higher general conventional CMRS spectrum will require a series of rapid rulemaking and engineering actions. Implicit in the positive engineering attributes of TSTR 1400 is a very high potential for long-term value. However, a series of significant

expansion, please contact: The following slides represent a basic overview of the technical attributes and applications strategies associated with this spectrum. For

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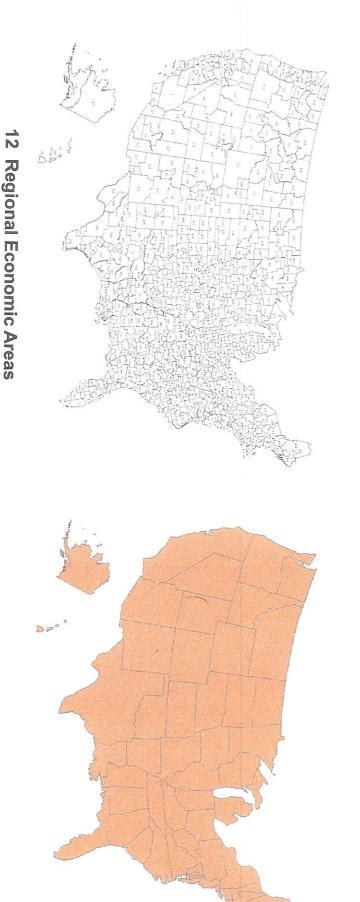
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Benefit of Effective TSTR 1400 U.S. Market Continuity

entities that cannot acquire geographically contiguous spectrum in the conventional auction process. This distinction will likely have long-term inflative effects on value for network operators, while opening the market for non-carrier in their license holdings. In contrast, TerreStar spectrum in the 1400 MHz band may be utilized with a single wide area authority. Previously offered terrestrial wireless bands have suffered from considerable and highly disadvantageous geographic fragmentation



734 Cellular Market Areas

Basic Economic Areas

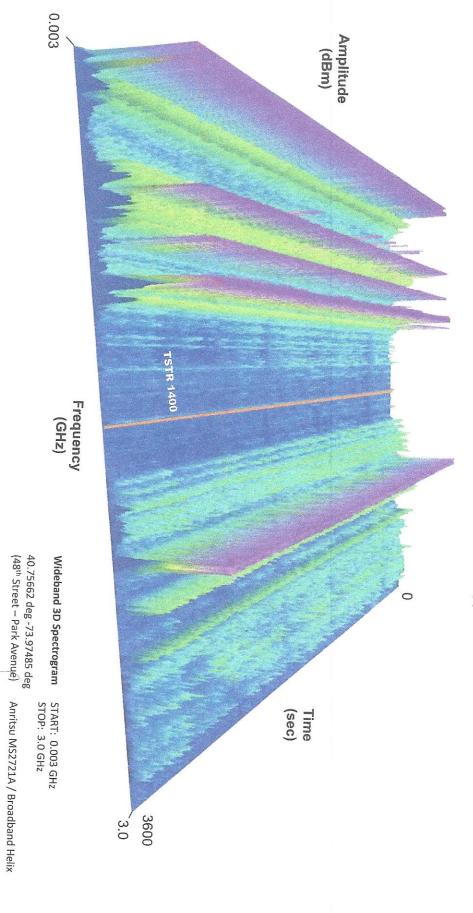
1 Nationwide License Authority

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The 1400 MHz Band is a Unique Low Noise Refuge

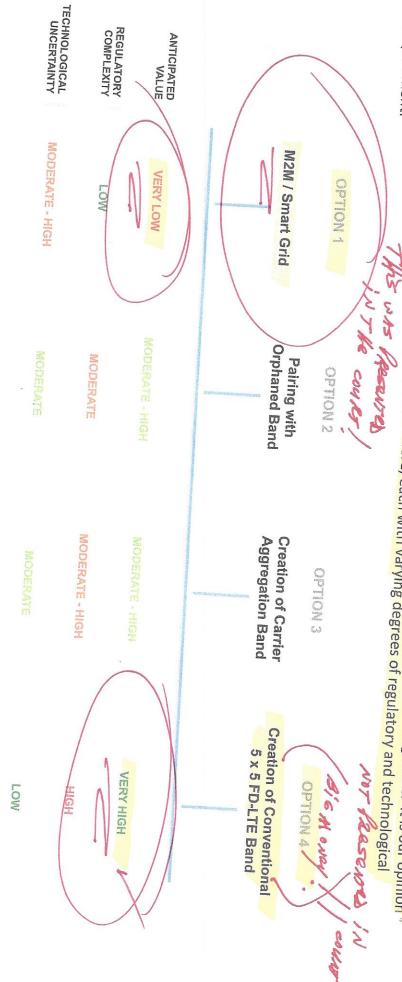
and interference characteristics of central L-Band. Free from the GPS considerations of other L-Band license holders, the TerreStar 1400 MHz band represents a unique spectrum resource for high density urban 4G data applications. The usable wireless spectrum spans less than 3 GHz. Of the few remaining spectrum allocations, none exhibit the extreme low noise





Value, Complexity, and Uncertainty for TSTR 1400

that at least three different types of application are possible here, each with varying degrees of regulatory and technological Repurposing TSTR 1400 for conventional commercial wireless service is the only viable means of increasing value. It is our opinion applications have traditionally been a focus for this band, it is clear that they are unlikely to represent recovery value for stakeholders. Four basic options delineate the likely range of sale / lease opportunities for TSTR 1400. Whereas M2M and related Smart Grid



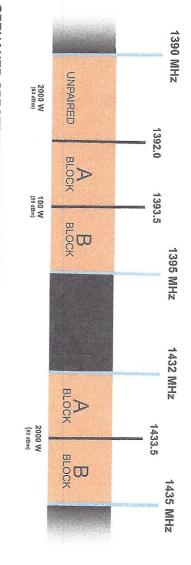




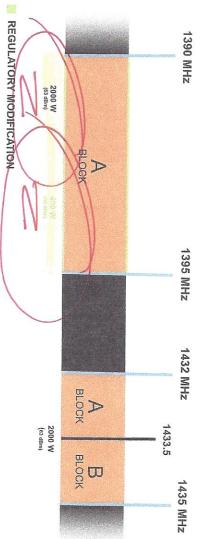
OPTION 2: Orphaned Spectrum Pairing Applications

part of the spectrum. Current possibilities include 700 MHz E-Block, as well as proposed 5 MHz LSQ "remedy" allocations. of TSTR 1400. These attributes may permit the band to service as a "cross-band" pair to otherwise unpaired allocations in another Detailed survey work will demonstrate the superior data carrying (high bits / Hz) and propagation (high cellular reuse) characteristics

ORIGINAL BAND PLAN



OPRHANED SPECTRUM PAIRING BAND PLAN



Configuration:

- (1) 5 MHz Unpaired Block(2) 1.5 MHz Unpaired Blocks

Engineering Potential:

- band" pairing. two critical market opportunities for "cross-Lower band configuration matches at least
- context of 4G CMRS applications. Upper band utility still problematic in the

Market Factors:

- delay market acceptance. Auction 69 rule modification (waiver) will
- Public domain discussion of exclusion
- zones complicates negotiation.

 3GPP and related standards process will

Anticipated Value Range:

AWS-4 Level Pricing (Depending on Pair)



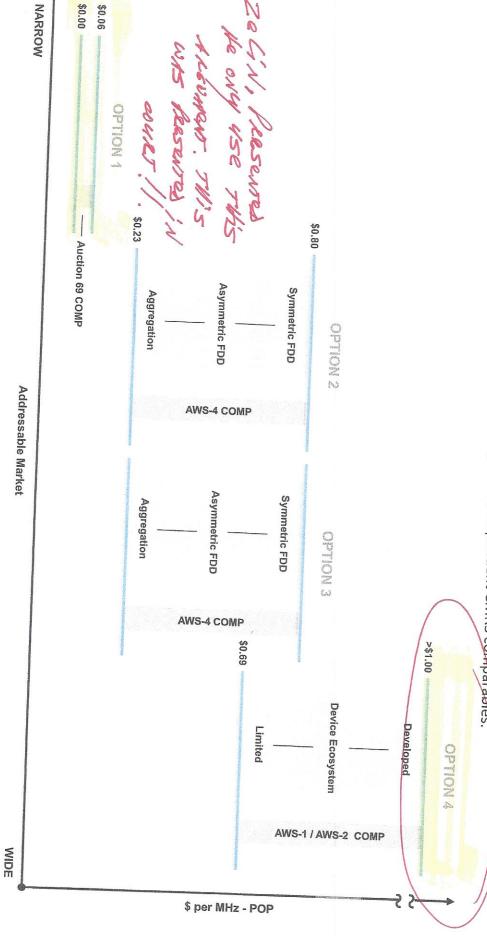
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this VALVABLE OFFICE

Value Ranges Across Band Configuration Options

The current TSTR 1400 band configuration is likely incompatible with values exceeding those of Auction 69. However, modifications

configurations. These values exist as discrete plateaus with configuration dependent CMRS comparables. to the original band plan may achieve significantly higher valuations, especially as they more closely mirror conventional CMRS band



Technical defense of build-out constraints

OOBE / Exclusion Zone

co-existence analysis in

support of increased

lower A + B Block EIRP

market fragmentation associated with M2M substantive service. deadline / clarification of

Regulatory and Supporting Technical Work by Band Configuration

aggregation may likely be achieved via a waiver process. However, the highest value configuration (symmetric 5x5 FDD band) will almost certainly require a complex rule-making process that accommodates the interests of adjacent band license,holders No band configuration option is without some need for regulatory relief, and modest re-banding in support of LTE-A carrier

(Auction 69 Configuration) OTIOZ 1

(Partial Aggregation) OPTON

(Full Aggregation) OPTION 3

(Conventional 5x5) ANOITONA

Waiver

Combine unpaired 2 MHz form 5 MHz channel with lower A + B Blocks to

Extension of build-out

Amendment

· Increase EIRP of lower A 100 W (50 dBm) to 400 W + B Block segment from

Waiver

- Regulatory treatment of
- · Combine upper A + B channel. Blocks to form 3 MHz

Rule-Waking / Re-Farming

- Regulatory treatment of
- Add 2 MHz to upper Block
- Combine Block segments into paired 5x5 MHz band
- Retain license geography
- OOBE / Exclusion Zone support of increased lower A + B Block EIRP co-existence analysis in
- 5 MHz / 3 MHz LTE-A **Aggregation Band impact**
- 5x3 MHz band pair device duplexer study

Aggregation device /

infrastructure filtration

5 MHz LTE-A Aggregation

Band impact study

- 5x5 MHz paired FD-LTE Band "National Broadband" impact study
- operators in adjacent re-Migration plan for existing farmed 2 MHz parcel federal / commercial